**DV UML Description**

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# Example

Formatting for UML description document.

## Variable

|  |  |
| --- | --- |
| Name: | Type: |
| Description: | |

## Function

|  |  |
| --- | --- |
| Name: | Params: |
| Return Type: | |
| Description: | |

# Analytics

Generates confusion matrices and k-fold cross validation results.

## Variables

|  |  |
| --- | --- |
| Name: percentageOverlapPointsUsed | Type: String |
| Description: Percentage of overlap points out of all points. | |
| Name: upper | Type: ArrayList<double[]> |
| Description: ArrayList holding overlap points on the upper graph. | |
| Name: lower | Type: ArrayList<double[]> |
| Description: ArrayList holding overlap points on the lower graph. | |
| Name: LDAFunction | Type: ArrayList<Double> |
| Description: ArrayList holding angles and threshold gotten from LDA applied to data without overlapping points. | |
| Name: curClasses | Type: ArrayList<String> |
| Description: ArrayList holding all currently visualized classes | |
| Name: CONFUSION\_MATRICES | Type: Map<Integer, JTextArea> |
| Description: Map holding all created confusion matrices. | |

## Functions

|  |  |
| --- | --- |
| Name: getCurClasses | Params: |
| Return Type: void | |
| Description: Gets current classes being visualized. | |
| Name: createCSVFileForConfusionMatrix | Params: ArrayList<ArrayList<double[]>> data, String fileName |
| Return Type: void | |
| Description: Creates CSV file with data to be used with LDA program. | |
| Name: LDAForConfusionMatrices | Params: boolean storeFunction, String fileName |
| Return Type: ArrayList<String> | |
| Description: Runs Linear Discriminant Analysis program on data in the file filename. Stores LDA function if storeFunction is true. | |

## GenerateAnalytics

Generates confusion matrices and k-fold cross validation results.

### Function

|  |  |
| --- | --- |
| Name: doInBackground | Params: |
| Return Type: Boolean | |
| Description: Generates all analytics in separate thread. | |

## AddOldConfusionMatrices

Gets old confusion matrices in a separate thread.

### Function

|  |  |
| --- | --- |
| Name: doInBackground | Params: |
| Return Type: Boolean | |
| Description: Adds old confusion matrices in separate thread. | |

## GetAllDataConfusionMatrix

Generates all data confusion matrix in a separate thread.

### Function

|  |  |
| --- | --- |
| Name: doInBackground | Params: |
| Return Type: Boolean | |
| Description: Creates allData confusion matrix in separate thread. | |

## GetDataWithoutOverlapConfusionMatrix

Generates data without overlap confusion matrix in a separate thread.

### Function:

|  |  |
| --- | --- |
| Name: doInBackground | Params: |
| Return Type: Boolean | |
| Description: Creates dataWithoutOverlap confusion matrix in separate thread. | |

## GetOverlapConfusionMatrix

Generates overlap confusion matrix in a separate thread.

### Function

|  |  |
| --- | --- |
| Name: doInBackground | Params: |
| Return Type: Boolean | |
| Description: Creates overlap confusion matrix in separate thread. | |

## GetWorstCaseConfusionMatrix

Generates worst case confusion matrix in a separate thread.

### Function

|  |  |
| --- | --- |
| Name: doInBackground | Params: |
| Return Type: Boolean | |
| Description: Creates worst case confusion matrix in separate thread. | |

## GetUserValidationConfusionMatrix

Generates user validation confusion matrix in a separate thread.

### Function

|  |  |
| --- | --- |
| Name: doInBackground | Params: |
| Return Type: Boolean | |
| Description: Creates user validation confusion matrix in separate thread. | |

## GetKFoldCrossValidation

Generates k-fold cross validation in a separate thread.

### Function

|  |  |
| --- | --- |
| Name: doInBackground | Params: |
| Return Type: Boolean | |
| Description: Runs k-fold cross validation in separate thread. | |

# AnalyticsMenu

Menu for toggling on/off or adjusting all analytic options.

## Function

|  |  |
| --- | --- |
| Name: AnalyticsMenu | Params: Point mouseLocation |
| Return Type: | |
| Description: Constructor for AnalyticsMenu. Creates AnlyticsMenu on mouseLocation. | |

# AngleSliders

Creates panel with slider for each angle. For each feature/dimension one slider panel will be created.

## Function

|  |  |
| --- | --- |
| Name: createSliderPanel | Params: String fieldname, int angle, int index |
| Return Type: void | |
| Description: Creates angle slider for given a given feature. | |

# ColorOptionsMenu

Menu for changing the colors of the graphs.

## Function

|  |  |
| --- | --- |
| Name: ColorOptionsMenu | Params: Point mouseLocation |
| Return Type: | |
| Description: Constructor for ColorOptionsMenu. Creates ColorOptionsMenu on mouseLocation. | |

# DataObject

For one class, a DataObject holds the data and GLC-L coordinates for the current angles of the DV program.

## Variables

|  |  |
| --- | --- |
| Name: className | Type: String |
| Description: Class name of data. | |
| Name: data | Type: double[][] |
| Description: n-D data | |
| Name: coordinates | Type: double[][] |
| Description: X and Y coordinates for each value of each feature of each datapoint. | |

## Functions

|  |  |
| --- | --- |
| Name: DataObject | Params: String name, double[][] dataValues |
| Return Type: | |
| Description: Constructor for DataObject. Instantiates className and data. | |
| Name: updateCoordinates | Params: double[] angles |
| Return Type: double | |
| Description: Updates coordinates of DataObject with given angles. Returns scale of updated coordinates. | |
| Name: generateCoordinates | Params: double[] datapoint, double[] angles |
| Return Type: double[][] | |
| Description: Generates updated coordinates for a single datapoint. | |
| Name: getXYPoint | Params: double value, double angle |
| Return Type: double[] | |
| Description: Generates coordinate for a single value. | |

# DataSetup

Sets up selected data to be used in the DV program.

## Variables

|  |  |
| --- | --- |
| Name: allClasses | Type: ArrayList<String> |
| Description: Hold classes for recently input data. | |
| Name: validationClasses | Type: ArrayList<String> |
| Description: Holds classes for recently input validation data. | |

## Functions

|  |  |
| --- | --- |
| Name: setupWithData | Params: File dataFile |
| Return Type: boolean | |
| Description: Sets up data in dataFile for use in the DV program. | |
| Name: setupValidationData | Params: File valFile |
| Return Type: Boolean | |
| Description: Sets up validation data in valFile for use in the DV program. | |
| Name: setupImportData | Params: File importFile |
| Return Type: Boolean | |
| Description: Sets up data in importFile for use in the DV program. | |
| Name: setupProjectData | Params: File proectjFile |
| Return Type: | |
| Description: Sets up data in projectFile for use in the DV program. | |
| Name: checkFormat | Params: String[][] stringData |
| Return Type: Boolean | |
| Description: Checks if stringData’s format is consistent with previously entered data. | |
| Name: getClassses | Params: String[][] stringData |
| Return Type: ArrayList<String> | |
| Description: Gets all classes from last column in stringData. | |
| Name: checkAllClasses | Params: String[][] stringData |
| Return Type: Boolean | |
| Description: Checks if classes in validation data are consistent with previously entered data. | |
| Name: getStringFromCSV | Params: String[][] stringData |
| Return Type: String[][] | |
| Description: Gets String[][] representation of data in csv file. | |
| Name: purgeID | Params: String[][] stringData |
| Return Type: String[][] | |
| Description: Removes ID column from stringData. | |
| Name: purgeClasses | Params: String[][] stringData |
| Return Type: String[][] | |
| Description: Removes class column from stringData. | |
| Name: getFieldNames | Params: String[][] stringData |
| Return Type: ArrayList<String> | |
| Description: Gets field names from header row of stringData. | |
| Name: stringToNumerical | Params: String[][] stringData |
| Return Type: double[][] | |
| Description: Transforms strings to double values. | |
| Name: normalizeData | Params: double[][] data |
| Return Type: double[][] | |
| Description: Uses z-Score Min-Max or Min-Max normalization to normalize data. | |
| Name: separateByClass | Params: double[][] data, ArrayList<String> classes |
| Return Type: ArrayList<double[][]> | |
| Description: Separates each class in data into a separates double[][]. | |
| Name: createDataObjects | Params: Array List<double[][]> data |
| Return Type: ArrayList<DataObject> | |
| Description: Creates a DataObject for each double[][] in data. | |
| Name: addImportedData | Params: ArrayList<double[][]> data, Boolean original |
| Return Type: ArrayList<DataObject> | |
| Description: Updates data in DV with new imported data. If original is true, then update original data or else, update normalized data. | |
| Name: manualMinMaxEntry | Params: String message |
| Return Type: double[] | |
| Description: Forum for manual min max entry. | |

# DataVisualization

Draws and adjusts the graphs for the DV program.

## Variables

|  |  |
| --- | --- |
| Name: GRAPHS | Type: Map<Integer, JPanel> |
| Description: Holds upper and lower graphs. | |
| Name: verticalScale | Type: double |
| Description: Vertical scaling of upper and lower graphs. | |

## Functions

|  |  |
| --- | --- |
| Name: optimizeSetup | Params: |
| Return Type: void | |
| Description: Optimizes visualization using LDA and optimizeThreshold(). | |
| Name: optimizeThreshold | Params: double bestAccuracy |
| Return Type: void | |
| Description: Finds the best threshold for a visualization. | |
| Name: optimizeVisualization | Params: |
| Return Type: void | |
| Description: Finds the best angles and threshold for a visualization. | |
| Name: undoOptimization | Params: |
| Return Type: void | |
| Description: Reverts to the angle and threshold setup before using optimizeVisualization(). | |
| Name: createCSVFile | Params: |
| Return Type: void | |
| Description: Creates csv file with data to be used with LDA program. | |
| Name: LDA | Params: |
| Return Type: void | |
| Description: Runs Linear Discriminant Analysis program on data to get the optimal angles and threshold. | |
| Name: getAccuracy | Params: |
| Return Type: void | |
| Description: gets the accuracy of the current visualization. | |
| Name: getOverlap | Params: |
| Return Type: void | |
| Description: Gets the overlap data of the current visualization. | |
| Name: drawGraphs | Params: int active |
| Return Type: void | |
| Description: Draws graphs. | |
| Name: getCoordinates | Params: ArrayList<DataObject> dataObjects |
| Return Type: double | |
| Description: Updates coordinates for each DataObject in dataObjects. Returns the largest scaling of the dataObjects. | |

## AddGraph

Draws a single graph in a separate thread.

### Variables

|  |  |
| --- | --- |
| Name: DATA\_OBJECTS | Type: ArrayList<DataObject> |
| Description: List of DataObjects to be graphed | |
| Name: UPPER\_OR\_LOWER | Type: int |
| Description: If 0 draw up, else draw down. | |
| Name: ACTIVE | Type: int |
| Description: Actively moving part or the graph. | |
| Name: GRAPH\_SCALER | Type: double |
| Description: Scaler for the graph. | |

### Function

|  |  |
| --- | --- |
| Name: AddGraph | Params: |
| Return Type: | |
| Description: Constructor for AddGraph. Instantiates variables. | |
| Name: doInBackground | Params: |
| Return Type: Boolean | |
| Description: Creates graph in separate thread. | |

# DV

Main window for the DV program.

## Variables

|  |  |
| --- | --- |
| Name: domainSlider | Type: RangeSlider |
| Description: Slider for the domain. | |
| Name: overlapSlider | Type: RangeSlider |
| Description: Slider for the overlap. | |
| Name: thresholdSlider | Type: JSlider |
| Description: Slider for the threshold. | |
| Name: angleSliderPanel | Type: JPanel |
| Description: Panel that holds angle sliders. | |
| Name: confusionMatrixPanel | Type: JPanel |
| Description: Panel that holds confusion matrices. | |
| Name: crossValidationPanel | Type: JPanel |
| Description: Panel that holds k-fold cross validation results. | |
| Name: analyticsPanel | Type: JPanel |
| Description: Panel that holds confusionMatrixPanel and crossValidationPanel. | |
| Name: graphPanel | Type: JPanel |
| Description: Panel that holds graphs. | |
| Name: sliderPanel | Type: JPanel |
| Description: Panel that holds sliders. | |
| Name: graphPane | Type: JScrollPane |
| Description: Scroll pane for graphs. | |
| Name: anglesPane | Type: JScrollPane |
| Description: Scroll pane for angles. | |
| Name: analyticsPane | Type: |
| Description: Scroll pane for analytics. | |
| Name: mainFrame | Type: JFrame |
| Description: Frame of the DV programs main window. | |
| Name: domainLines | Type: Color |
| Description: Color of domain lines. | |
| Name: overlapLines | Type: Color |
| Description: Color of Overlap lines. | |
| Name: thresholdLine | Type: Color |
| Description: Color of threshold line. | |
| Name: background | Type: Color |
| Description: Background color of graphs. | |
| Name: graphColors | Type: Color[] |
| Description: Colors of upper and lower graphs. | |
| Name: showBars | Type: boolean |
| Description: Whether to show a frequency bar graph or individual marking points for the graphs or not. | |
| Name: drawOverlap | Type: boolean |
| Description: Whether to draw all data or just overlap data or not. | |
| Name: domainActive | Type: boolean |
| Description: Whether the domain lines are active or not. | |
| Name: domainArea | Type: double[] |
| Description: Upper and lower range of the domain. | |
| Name: overlapArea | Type: double[] |
| Description: Upper and lower range of the overlap. | |
| Name: threshold | Type: double |
| Description: Location of the overlap line. | |
| Name: prevThreshold | Type: double |
| Description: Location of the previous threshold before using optimizeVisualization(). | |
| Name: upperClass | Type: int |
| Description: Index number of the class visualized on the upper graph. | |
| Name: lowerClasses | Type: ArrayList<Boolean> |
| Description: ArrayList of Booleans. A Boolean is true if that class is being visualized on the lower graph. | |
| Name: showPopup | Type: boolean |
| Description: Whether to show the graph scaling warning popup or not. | |
| Name: upperIsLower | Type: boolean |
| Description: Whether the upper class is on the lower or left side of the graph or not. | |
| Name: accuracy | Type: double |
| Description: Accuracy of the current visualization. | |
| Name: allDataCM | Type: String |
| Description: Confusion matrix for all data of the current visualization. | |
| Name: prevAllDataCM | Type: ArrayList<String> |
| Description: ArrayList of each all data confusion matrix before specifying the visualization. Only applies with 3+ class visualizations. | |
| Name: allDataClassifications | Type: int[] |
| Description: Correct and incorrect classifications of the current visualization. | |
| Name: prevAllDataClassifications | Type: ArrayList<int[]> |
| Description: ArrayList of each all data classification before specifying the visualization. Only applies with 3+ class visualizations. | |
| Name: prevAllDataChecked | Type: boolean |
| Description: Whether to display the prevAllData confusion matrix or not. | |
| Name: allDataChecked | Type: boolean |
| Description: Whether to display the allData confusion matrix or not. | |
| Name: withoutOverlapChecked | Type: boolean |
| Description: Whether to display the withoutOverlap confusion matrix or not. | |
| Name: overlapChecked | Type: boolean |
| Description: Whether to display the overlap confusion matrix or not. | |
| Name: worstCaseChecked | Type: boolean |
| Description: Whether to display the worst-case confusion matrix or not. | |
| Name: userValidationChecked | Type: boolean |
| Description: Whether to display the user validation confusion matrix or not. | |
| Name: userValidationImported | Type: boolean |
| Description: Whether the user validation data has been imported or not. | |
| Name: crossValidationChecked | Type: boolean |
| Description: Whether to display the k-fold cross validation results or not. | |
| Name: crossValidationNotGenerated | Type: boolean |
| Description: Whether the k-fold cross validation results have been generated or not. | |
| Name: kFolds | Type: int |
| Description: Number of folds to use in k-fold cross validation. | |
| Name: hasID | Type: boolean |
| Description: Whether the data’s first column is for ID or not. | |
| Name: hasClasses | Type: boolean |
| Description: Whether the data’s last column is for classes or not. | |
| Name: zScoreMinMax | Type: boolean |
| Description: Whether to use zScoreMinMax normalization or not. | |
| Name: angles | Type: double[] |
| Description: Current angles of the visualization. | |
| Name: prevAngles | Type: double[] |
| Description: Previous angles of the visualization before using optimzeVisualization(). | |
| Name: data | Type: ArrayList<DataObject> |
| Description: ArrayList of DataObjects. Each class in the visualization has its own DataObject of normalized data. | |
| Name: originalData | Type: ArrayList<DataObject> |
| Description: ArrayList of DataObjects. Each class in the visualization has its own DataObject. | |
| Name: validationData | Type: ArrayList<DataObject> |
| Description: ArrayList of DataObjects. Each class in the validation set has its own DataObject of normalized data. | |
| Name: uniqueClasses | Type: ArrayList<String> |
| Description: Unique classes in the data. | |
| Name: classNumber | Type: int |
| Description: Number of classes in the data. | |
| Name: fieldNames | Type: ArrayList<String> |
| Description: Name of each feature/dimension in the data. | |
| Name: fieldLength | Type: int |
| Description: Number of dimensions in the data. | |
| Name: projectSaveName | Type: String |
| Description: Name of the projects save file. | |

## Functions

|  |  |
| --- | --- |
| Name: DV | Params: |
| Return Type: | |
| Description: Constructor for the DV program. Creates the menu and tool bars. | |
| Name: createMenuBar | Params: |
| Return Type: void | |
| Description: Creates menu bar for the DV program. | |
| Name: createToolBar | Params: |
| Return Type: void | |
| Description: Creates tool bar for the DV program. | |
| Name: uiPanel | Params: |
| Return Type: JPanel | |
| Description: Creates main panel for the DV program. | |
| Name: blankGraph | Params: |
| Return Type: ChartPanel | |
| Description: Creates blank graph. | |
| Name: createNewProject | Params: |
| Return Type: void | |
| Description: Creates new project. | |
| Name: createUserValidationSet | Params: |
| Return Type: void | |
| Description: Creates user validation set. | |
| Name: importData | Params: |
| Return Type: void | |
| Description: Imports new data into project. | |
| Name: openSavedProject | Params: |
| Return Type: void | |
| Description: Opens previously saved project. Projects are saved as csv files. | |
| Name: saveProject | Params: |
| Return Type: void | |
| Description: Saves project with established project save. Projects are saved as csv files. | |
| Name: saveProjectAs | Params: |
| Return Type: void | |
| Description: Saves project with specified filename. Projects are saved as csv file. | |
| Name: normalizationInfoPopup | Params: |
| Return Type: void | |
| Description: Popup giving information on normalization methods. | |
| Name: resetProgram | Params: |
| Return Type: void | |
| Description: Resets program in preparation for a new project. | |

# Main

Runs DV program.

## Function

|  |  |
| --- | --- |
| Name: main | Params: String[] args |
| Return Type: void | |
| Description: Runs DV program. | |

# RangeSlider

Slider for the domain and overlap of the DV program.

## Functions

|  |  |
| --- | --- |
| Name: RangeSlider | Params: |
| Return Type: | |
| Description: Constructor for RangeSlider. Sets orientation to horizontal. | |
| Name: getValue | Params: |
| Return Type: int | |
| Description: Gets value of lower thumb. | |
| Name: setValue | Params: |
| Return Type: void | |
| Description: Sets value of lower thumb. | |
| Name: getUpperValue | Params: |
| Return Type: int | |
| Description: Gets value of upper thumb. | |
| Name: setUpperValue | Params: |
| Return Type: void | |
| Description: Sets value of upper thumb. | |

# RangeSliderUI

Look and feel of the RangeSlider.

## Variables

|  |  |
| --- | --- |
| Name: TRACK\_COLOR | Type: Color |
| Description: Color of slider track. | |
| Name: LEFT\_THUMB\_COLOR | Type: Color |
| Description: Color of left thumb. | |
| Name: RIGHT\_THUMB\_COLOR | Type: Color |
| Description: Color of right thumb. | |
| Name: TRACK\_SHAPE | Type: RoundRectangel2D.Float |
| Description: Shape of slider track. | |
| Name: upperThumbRect | Type: Rectangle |
| Description: Shape of upper thumb. | |
| Name: lowerDraggin | Type: boolean |
| Description: Whether the lower thumb is being dragged or not. | |
| Name: upperDragging | Type: boolean |
| Description: Whether the upper thumb is being dragged or not. | |
| Name: upperThumbSelected | Type: boolean |
| Description: Whether the upper thumb was the last selected thumb or not. | |

## Functions

|  |  |
| --- | --- |
| Name: RangeSliderUI | Params: RangeSlider rs, Color track, Color left, Color right |
| Return Type: | |
| Description: Constructor for RangeSliderUI. Initializes track and thumb colors. | |
| Name: installUI | Params: JComponent c |
| Return Type: void | |
| Description: Creates upper thumb component. | |
| Name: createTrackListener | Params: JSlider slider |
| Return Type: TrackListener | |
| Description: Creates TrackListener for RangeSlider. | |
| Name: createChangeListener | Params: JSlider slider |
| Return Type: ChangeListener | |
| Description: Crates ChangeListener for RangeSlider. | |
| Name: calculateTrackRect | Params: |
| Return Type: void | |
| Description: Calculates the track rectangle. | |
| Name: calculateThumbSize | Params: |
| Return Type: void | |
| Description: Calculates thumb size. | |
| Name: calculateThumbLocation | Params: |
| Return Type: void | |
| Description: Calculates the location of the lower and upper thumbs. | |
| Name: getThumbSize | Params: |
| Return Type: Dimension | |
| Description: Gets the thumb size. | |
| Name: setUpperThumbLocation | Params: int x, int y |
| Return Type: void | |
| Description: Sets the location of the upper thumb. | |
| Name: paint | Params: Graphics g, JComponent c |
| Return Type: void | |
| Description: Paints slider and thumbs. | |
| Name: paintTrack | Params: Graphics g |
| Return Type: void | |
| Description: Paints slider track. | |
| Name: paintThumb | Params: Graphics g |
| Return Type: void | |
| Description: Overrides paintThumb to do nothing. | |
| Name: paintLowerThumb | Params: Graphics g |
| Return Type: void | |
| Description: Paints lower thumb. | |
| Name: paintUpperThumb | Params: Graphics g |
| Return Type: void | |
| Description: Paints upper thumb. | |

## ChangeHandler

Handles changes to a RangeSlider that happened without the slider.

### Functions

|  |  |
| --- | --- |
| Name: stateChanged | Params: ChangeEvent ag0 |
| Return Type: void | |
| Description: Updates the RangeSlider if changed without slider. | |

## RangeTrackListener

Handles change to a RangeSlider that happen with the slider.

### Functions

|  |  |
| --- | --- |
| Name: mousePressed | Params: MouseEvent e |
| Return Type: void | |
| Description: Gets pressed thumb if mouse is pressed. | |
| Name: mouseReleased | Params: MouseEvent e |
| Return Type: void | |
| Description: Released selected thumb. | |
| Name: mouseDragged | Params: MouseEvent e |
| Return Type: void | |
| Description: Updates thumbs with updated locations. | |
| Name: moveLowerThumb | Params: |
| Return Type: void | |
| Description: Sets lower thumb in new location. | |
| Name: moveUpperThumb | Params: |
| Return Type: void | |
| Description: Sets upper thumb in new location. | |

# Resolutions

Resolutions for various portions of the DV program for various screen sizes.

## Variables

|  |  |
| --- | --- |
| Name: dvWindow | Type: int[] |
| Description: Resolution for DV program | |
| Name: angleSliderPanel | Type: int[] |
| Description: Resolution for angle slider panel. | |
| Name: chartPanel | Type: int[] |
| Description: Resolution for chart panel. | |
| Name: sliderPanel | Type: int[] |
| Description: Resolution for slider panel. | |
| Name: anglesPane | Type: int[] |
| Description: Resolution for angles pane. | |
| Name: domainSlider | Type: int[] |
| Description: Resolution for domain slider. | |
| Name: confusionMatrixPane | Type: int[] |
| Description: Resolution for confusion matrix pane | |
| Name: singleChartPanel | Type: int[] |
| Description: Resolution for single chart panel. | |

## Function

|  |  |
| --- | --- |
| Name: setResolution | Params: int resolution |
| Return Type: void | |
| Description: Sets resolutions for different panes and panels of the DV program. | |

# ThresholdSliderUI

Look and feel of the Threshold Slider.

## Variable

|  |  |
| --- | --- |
| Name: TRACK\_SHAPE | Type: RoundRectangle2D.Float |
| Description: Shape of ThresholdSlider track. | |

## Functions

|  |  |
| --- | --- |
| Name: ThresholdSliderUI | Params: JSlider b |
| Return Type: | |
| Description: Constructor for ThresholdSliderUI | |
| Name: calculateTrackRect | Params: |
| Return Type: void | |
| Description: Calculates the track rectangle. | |
| Name: calcualteThumbLocation | Params: |
| Return Type: void | |
| Description: Calculates the location of the thumb. | |
| Name: getThumbSize | Params: |
| Return Type: Dimension | |
| Description: Gets the thumb size. | |
| Name: paint | Params: Graphics g, JComponent c |
| Return Type: void | |
| Description: Paints the slider. | |
| Name: paintTrack | Params: Graphics g |
| Return Type: void | |
| Description: Paints the track. | |
| Name: paintThumb | Params: Graphics g |
| Return Type: void | |
| Description: Paints the thumb. | |

# VisualizationOptionsMenu

Menu for various visualization options.

## Function

|  |  |
| --- | --- |
| Name: VisualizationOptionsMenu | Params: Point mouseLocation |
| Return Type: | |
| Description: Constructor for the VisualizationOptionsMenu. Creates VisualizationOptionsMenu on mouseLocation. | |